

July 31, 1947; (L. W. Noble; on alfalfa). [Both U. S. N. M.] 1 ♂; Arizona; [A. N. S. P.]. 1 ♂; Blythe, California; July 30, 1947; (Ray F. Smith; on alfalfa); [California Insect Survey]. 1 ♂; Experiment Farm, Imperial Co., California; June 1, 1912; (J. C. Bridwell; visiting glandular hairs on leaves of *Helianthus annuus*); [K. V. K.]. Paratypes vary in length from 9 to 11 mm.

Specimens from Chilpancingo, Guerrero, Mexico, and Baja California, recorded respectively by Cameron, 1894 (Biol. Centr.-Amer., Hym. 2: 258, pl. 12, fig. 23), and Fox, 1895 (Proc. Calif. Acad. Sci. (2) 5: 263, pl. 21, figs. 1-5), are probably referable to *rufiventris hyalinatus*.

A METHOD FOR COLLECTING MALE STYLOPS

(Coleoptera, Stylopidae)

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Males of the Stylopidae are generally uncommon in insect collections, more particularly those genera which are parasitic on solitary nesting Hymenoptera. For this reason, results obtained from using females of *Stylops pacifica* Bohart to attract large numbers of males may be of interest.

S. pacifica is a relatively common parasite of *Andrena complexa* Viereck and *A. suavis* Timberlake. These two bees, which occur throughout Northern California and Oregon from sea level to about 7000 feet, are apparently limited in their pollen collecting habits to the flowers of *Ranunculus*. At lower elevations emergence of the bees varies from the middle of February to the middle of March depending on the season. Almost one hundred percent of the first individuals to appear in any one locality are parasitized by *S. pacifica*. The parasites are very conspicuous, since they protrude from between the posterior abdominal tergites of their host. The female has her flat, brown, triangular cephalothorax exposed while the male is recognizable by its larger, darker, oval puparium. On the first warm day after the appearance of the bees the male Stylops emerge from their puparia. These males are capable of immediate flight and have been observed to live only a few hours. However, males may be encountered in the field over a period of a week to ten days.

The ability of female insects to attract males has been used by collectors with varying degrees of success in many groups, but its use for the capture of male *Stylops* has not been reported. In the spring of 1947 a study of the mating behavior of *S. pacifica* was undertaken. For this study a number of bees containing the female parasite were placed on flowers and on several occasions males appeared within a few minutes. In 1948 emergence of the bees was first noted on February 16 when 7 male *Stylops* were collected in one hour by placing bees containing female parasites on the flowers. The following day, which was somewhat overcast, the same method gave negative results. On the next clear day, February 20, 193 males were taken by two collectors in two and one half hours. Of this number 111 were captured by one collector using a single *Andrena complexa* which contained a female parasite. After three days of inclement weather collecting was resumed with the stylopized bees confined in small cages. The cages consisted of a three inch tube of cloth with a cork stopper inserted in each end. In this experiment each parasitized bee was immobilized by lightly crushing its thorax. The bee was then pinned through the thorax and the pin inserted into the smaller end of the cork within the cage. Three such cages were set out at intervals of about two hundred feet and visited regularly over a period of two hours. During this time 263 males were collected either on or flying about cages. In this experiment it was found that the cages were very effective when set out on barren ground away from surrounding flowers.

The greatest difficulty in this technique is the problem of obtaining female parasites which will attract the males. Of the total of 152 female *Stylops* collected in 1948 only 8 were found to be attractive to males at the time of capture. However, the bees which were captured earliest in the morning contained the greatest percentage of females which could be used for trapping. At the time that the 152 female *Stylops* were taken, bees containing the empty puparia of 269 male *Stylops* were collected. In contrast to the number of empty puparia observed, a total of 510 males of *S. pacifica* were attracted by the use of the 8 females.

R. M. Bohart in his 1941 revision of the Strepsiptera reports known males for about half of the North American species of the genus *Stylops*. If it is found that this trapping method can be applied to other members of this genus the number of species from which males are known may be increased.